SANTA CLARA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
ENGINEER'S REPORT OF PROPOSED IMPROVEMENTS FOR
MAGDALENA CREEK
ZONE NW-1; THE NORTHWEST ZONE

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ENGINEER'S REPORT

PROPOSED IMPROVEMENTS FOR ZONE NW-1

PROJECT NO. 10 020

MAGDALENA CREEK

SANTA CLARA COUNTY FLOOD CONTROL

AND

WATER CONSERVATION DISTRICT

Donald K. Currlin
Manager-Counsel

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santa clara county
FLOOD CONTROL AND WATER CONSERVATION DISTRICT
DONALD K. CURRLIN
MANAGER - COUNSEL
70 WEST ROSA STREET
SAN JOSE 10, CALIFORNIA
CYPRESS 8-2031

December 12, 1962

Honorable Board of Supervisors
County of Santa Clara
70 West Rosa Street
San Jose 10, California

Gentlemen:

Transmitted herewith is the Engineer's Report of Proposed Improvements for Magdalena Creek, Project Number 10 020 in Zone NW-1 (Northwest) of the Santa Clara County Flood Control and Water Conservation District. The report covers proposed improvements for 3,775 feet of channel. The estimated total cost of these facilities is $82,000. Such costs may be easily financed out of normal zone taxes.

It is recommended that your Honorable Board hold a public hearing on this proposed improvement as required by law.

Very truly yours,

George H. Prime

GEORGE H. PRIME
Acting District Engineer

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ENGINEERS REPORT
FOR THE IMPROVEMENT OF MAGDALENA CREEK
PROJECT NO. 10 020, ZONE NW-1 (NORTHWEST ZONE)

INTRODUCTION

Magdalena Creek, a tributary of Hale Creek, is located in the southeasterly portion of Los Altos Hills, and begins near the southerly end of Blanoor Way. From its beginning, this tributary closely parallels Magdalena Avenue to its outfall into Hale Creek main branch at a point northeast of Summerhill Avenue, and adjacent to the Los Altos Country Club.

During the mid-twenties when the Los Altos Country Club was established, a series of subdivisions were planned around the Club's perimeter. These subdivisions were designated on a map under the general title of "Subdivision of the Hale Ranch, Loyola, Santa Clara County, California" and were developed prior to the establishment of control ordinances. As a consequence, the drainage installations were for the most part inadequate.

These inadequate drains have caused considerable flooding of properties that face Park Avenue, Magdalena Avenue, Spalding Avenue, and Greensward Drive. The installation of the facilities proposed in this report will alleviate these conditions.

This report (comprising this document and the maps and general construction plans attached hereto) shows:

1. A general description of the work proposed to be done, together with general plans, profiles, cross-sections and general specifications relating thereto, on the project constituting the improvement.

2. A general description of the land, rights of way, easements, and property proposed to be taken, acquired or injured in carrying out said work.

3. Maps which show the location of the projects constituting the improvement, and land, rights of way, easements, and property to be taken, acquired, or injured in carrying out said work, and any information in regard to the same that is deemed necessary or useful.

4. An estimate of the cost of the project constituting the improvement in Zone NW-1, which includes an estimate of the cost of the land, rights of way, easements, and property to be taken, acquired, or injured in carrying out said improvement, and also of all incidental expenses likely to be incurred in connection therewith, including legal, clerical, engineering, superintendence, inspection, printing, and advertising.

WATERSHED DESCRIPTION

Headwaters of Magdalena Creek begin near the main ridge between the Permanente and Hale Creek watersheds. The watershed suddenly narrows as the stream crosses Ravensbury Avenue because of the proximity of Hale Creek to the northwest and another small tributary to the southeast. From this point northeasterly to the confluence with Hale Creek, the watershed averages only 1,000 feet in width. Total area of the watershed is 245 acres.

From approximately one hundred feet south of Spalding Avenue to the southerly border of the Golf Club at Hillview Avenue, the stream meanders under and around houses through small pipes, ditches, and redwood boxes. Portions of the latter have collapsed since their installation many years ago. The creek then crosses Hillview Avenue through a small pipe culvert, wanders across the Golf green in a sheet flow and finally spills into the east branch of Hale Creek. The East Branch then crosses Magdalena Avenue about eight hundred feet north of Summerhill Avenue, where it reaches a confluence with the main branch of Hale Creek.

WATERSHED DEVELOPMENT

The entire Magdalena Creek watershed lies in rolling hills and portions of the upper reaches are quite steep. The lots in the aforesaid Hale Ranch Subdivision average about 10,000 square feet in size, but home builders in this area have obtained from one and one-half to two lots, thus increasing the minimum home site area to 15,000 square feet or greater.

Zoning for current development requires a minimum lot size of one-half to one acre for each single residence and will probably remain so until the entire watershed reaches its full development.

The beauty of the area, low-density zoning, and existing land costs tend to encourage the construction of residences that are above the medium price class. The future development for schools and commercial areas will, therefore, be along the generally accepted lines that are supplemental to such a residential area.

BASIC CRITERIA

The criteria used in establishing preliminary design of structures, channels, and grades for the Magdalena Avenue project are shown in the following table:

Protection Level (design storm)	
Open channels	50-year frequency
Closed Conduits	50-year frequency
Roughness Coefficients	
Large Reinforced Concrete Pipes	n = 0.013 (Manning)
Earth Channels	n = 0.030 (Manning)

Freeboard	
Subcritical Velocity in Earth Channel	2 feet
Supercritical Velocity through concrete structures	Contains Energy grade line within channel
Maximum Velocity in sodded Earth Channel	8.2 feet per second
Maximum Velocity in Pipes	18 feet per second

Peak Flow Computation
Overland Flow-Channel Routing Method
C = 0.40 in all potentially developable land
= 0.40 in hilly portions of the upper watershed
I = Based on San Jose Rainfall Curve multiplied by a conversion factor of 1.4.

The table below shows the watershed area and calculated peak runoff flows at key points along the project:

Location	Watershed Area	Design Runoff
1. Ravensbury Avenue	179 ac.	110 cfs
2. Spalding Avenue	220 ac.	131 cfs
3. Hale Creek Confluence	245 ac.	144 cfs

PROJECT DESCRIPTION

From the beginning of the project to Ravensbury Avenue, it is proposed to install a basin which will trap silt and detritus brought down from the hills by high flows, and thus avoid their deposition in the reach from Ravensbury to approximate station 8+00. Since the site will be adjacent to Magdalena Avenue, the public road can be used for access when cleaning the basin. The existing Ravensbury culvert is adequate in size, but requires transition wing walls and a reinforced concrete floor in order to increase velocities through the culvert and thus avoid deposition of capacity-reducing silt.

From Ravensbury Avenue to station 8+00, the creek will be cleaned and maintained in its existing location with necessary access obtained by traveling along the Magdalena Avenue right of way. This will, in turn, preclude the necessity of removing large trees which now line the banks and thus preserve the aesthetics of the area. At such time as the adjacent area is developed along this reach, the channel may be realigned within the right of way delineated on the plans, should the developer so desire.

From station 8+00 to the pipe intake at approximately station 9+75, it will be necessary to realign the creek and also to remove a few small trees. It will be necessary to obtain right of way for this realignment from station 8+00 to approximately station 9+10. From station 9+10 to station 34+00, the channel and proposed 42-inch reinforced concrete pipe will be installed in existing County road right of way.

It is recommended that the pipe to be placed in Magdalena Avenue have sufficient capacity to contain flood flows during a 50-year storm.

Installing the pipe outfall at the Hale Creek crossing of Hillview Avenue will shorten the creek's course by approximately 1,200 feet and thus a considerable saving will be effected. The existing Hale Creek channel in the reach from Hillview Avenue to the confluence with the east branch will be deepened slightly to provide the required increased capacity. Channel enlargement northerly of Summerhill Avenue will be done on a maintenance basis.

Since the existing Hillview Avenue culvert is inadequate for the peak flow of the main branch of Hale Creek, it is proposed to install a temporary sacked concrete riprap outfall structure which will serve until a new culvert is constructed. It is also proposed to install a reinforced concrete floor in the Summerhill Avenue culvert at an elevation that will ensure proper grade from the outfall to the culvert for non-erosive velocities in Hale Creek.

STAGING OF THE PROJECT

First stage construction will cover the reach from station 8+00 to the end of project, including the proposed work in Hale Creek.

Second stage construction will include the silt basin upstream from Ravensbury Avenue, some improvements to the existing Ravensbury culvert, and the earth channel work from Ravensbury to the beginning of the channel realignment work at station 8+00. The stage two reach can be improved on a maintenance basis until the adjacent land is developed, at which time complete work shown on the plans can be coordinated with the work of the land developer.

Supplementary Maintenance

In addition to the construction shown on the plans, it may also be necessary to construct, on a maintenance basis, various erosion control facilities in the ravines in the upper reaches of the watershed. This will prevent high maintenance costs which follow the deposition of silt and detritus in improved downstream channels and pipes.

PROJECT COSTS

In the following table, the construction costs for all stages are based on current prices. Items included in contingencies are right of way, engineering, advertising, legal fees, and all other incidentals.

Stage No.	Station Limits of Stage	Const. Cost	Conting. Cost	Total Cost
I	8+00 to 37+75	$ 58,165	$ 11,630	$ 69,795
II	0+00 to 8+00	8,390	3,815	12,205
	Totals	$ 66,555	$ 15,445	$ 82,000

No cost estimates are presently available for the erosion control projects which may be necessary in the upper ravines. After the final stages of the proposed projects have been completed, it is recommended that needed check dams be constructed on a maintenance basis. Construction of such erosion control structures can be delayed for a few years until financing is available or until local development begins to encroach upon the check dam sites.

FINANCING

Since the Northwest Zone has a relatively high assessed valuation and an adequate revenue from existing tax assessment, it is recommended that the improvements as shown be constructed out of such revenues without raising the existing tax rate. The portion of the project within the freeway right of way will most likely be financed by the State Highway Department to the extent of their accrued benefits.

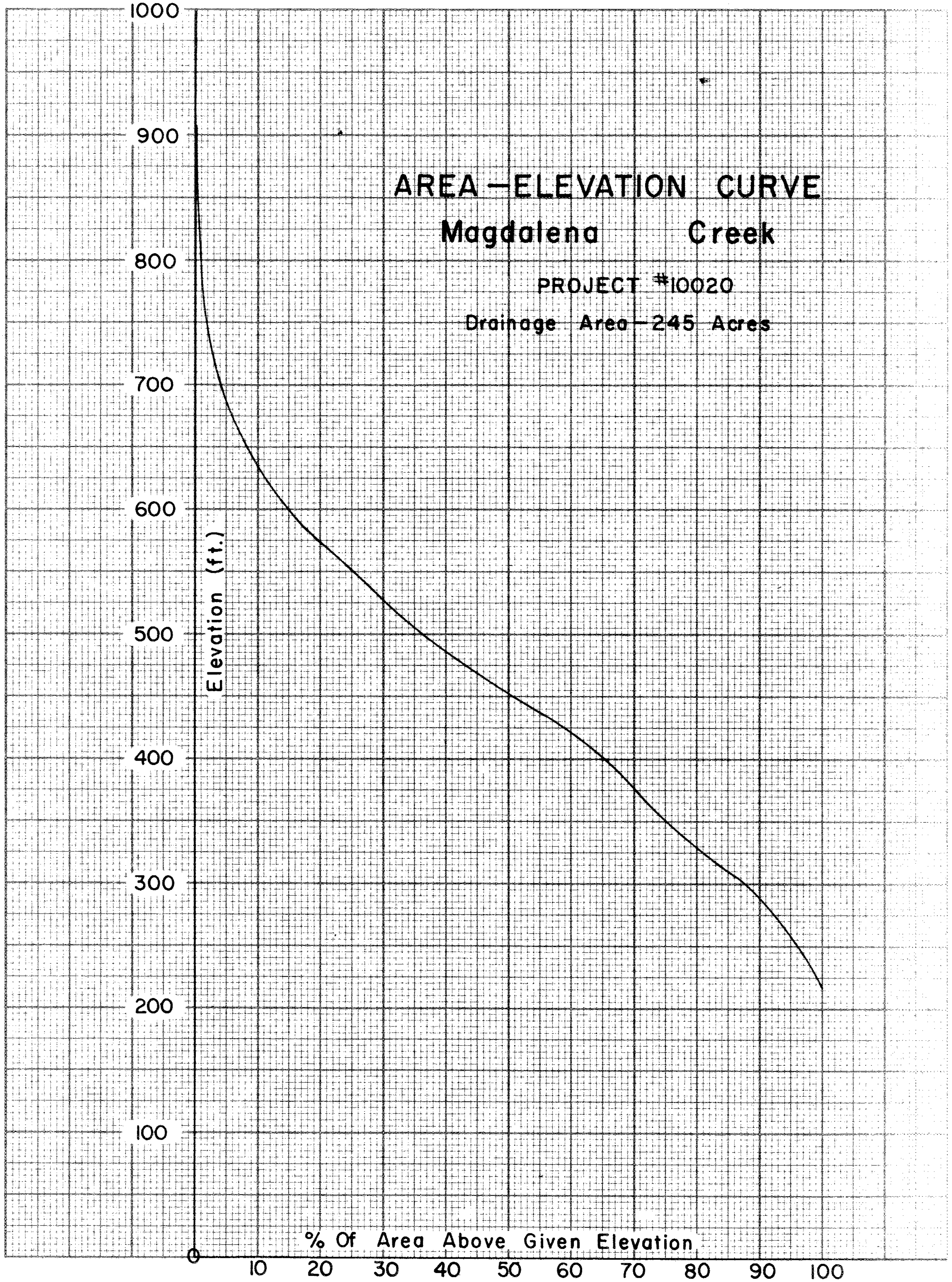
CONCLUSIONS AND RECOMMENDATIONS

Unregulated development dating back to 1925, along the easterly side of Magdalena Avenue, has resulted in the building of homes in the path of the natural stream alignment which could have been utilized for channel improvement. It is therefore necessary to provide an underground conduit which can be laid within the available right of way of Magdalena Avenue. Such a conduit will alleviate the flooding of the several homes which have inadvertently been built within the streambed. Economies have been effected in the proposed project by utilizing existing earth channel where available, and by placing the necessary underground conduit in existing street right of way, thus minimizing the purchase of new right of way. A further economy has been effected by diverting the Magdalena Creek flow into Hale Creek at a point some 1,200 feet south of the original confluence of these two streams.

Since the herein proposed project is located in the Northwest Zone, which has a reasonably high assessed valuation, it can be constructed without a tax increase; especially if construction is staged as proposed herein.

It is therefore recommended that the Board of Supervisors hold a public hearing, as required by law, on this report and the accompanying plans and that necessary action to expedite construction of this project be approved.

CLEARPRINT CHARTS



AREA—ELEVATION CURVE
Magdalena Creek
PROJECT #10020
Drainage Area—245 Acres

PLATE I

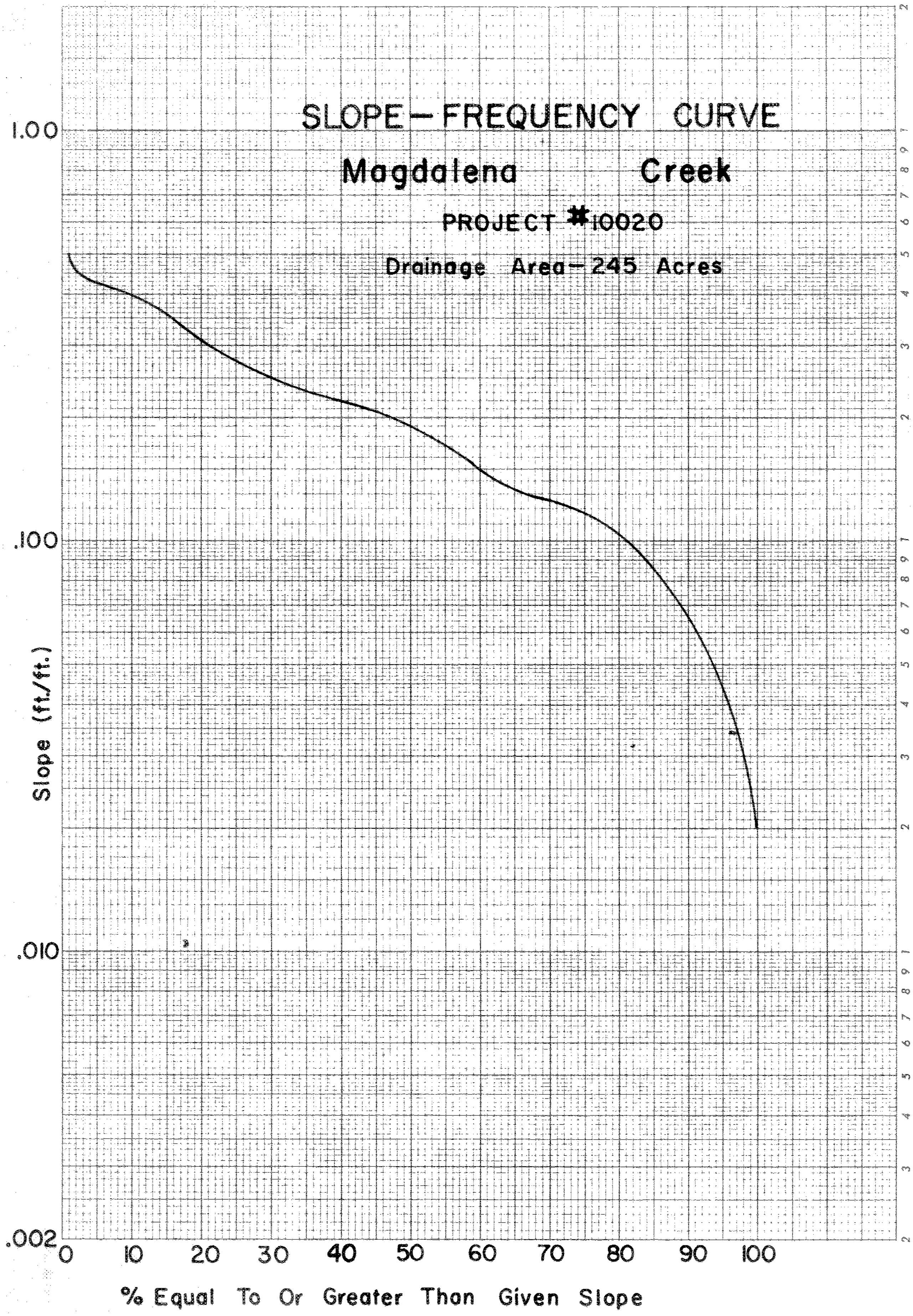
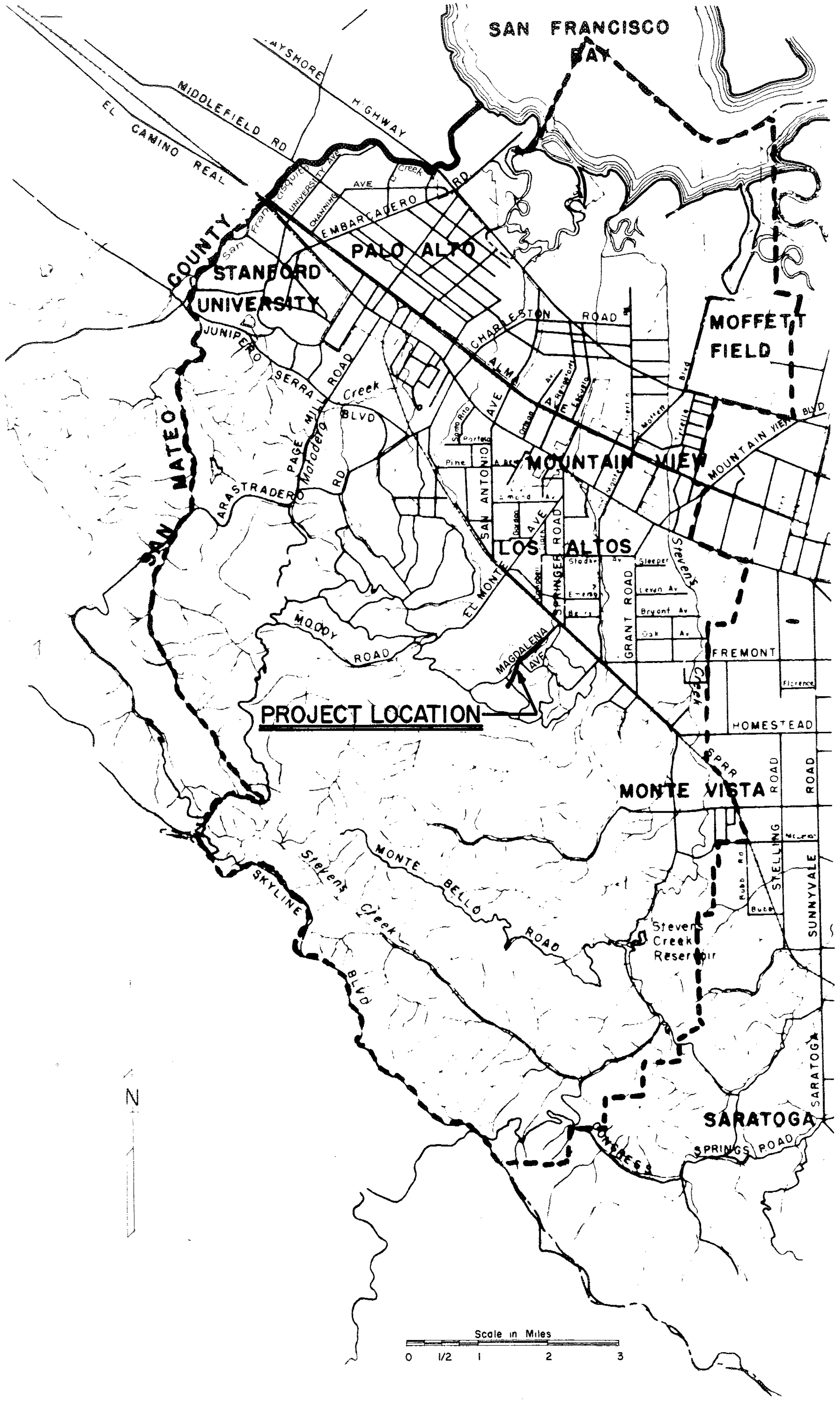


PLATE 2

CLEARPRINT CHARTS



MAP AND GENERAL CONSTRUCTION PLANS

OF

ZONE NW-1 "NORTHWEST," PROJECT NO. 10020

MAGDALENA CREEK IMPROVEMENT

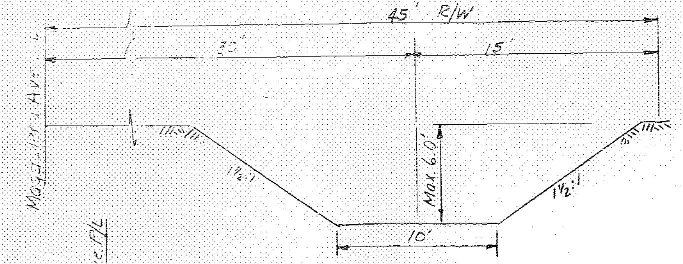
FROM 150' SW OF RAVENSBURY AVENUE TO HILLVIEW AVENUE

SANTA CLARA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

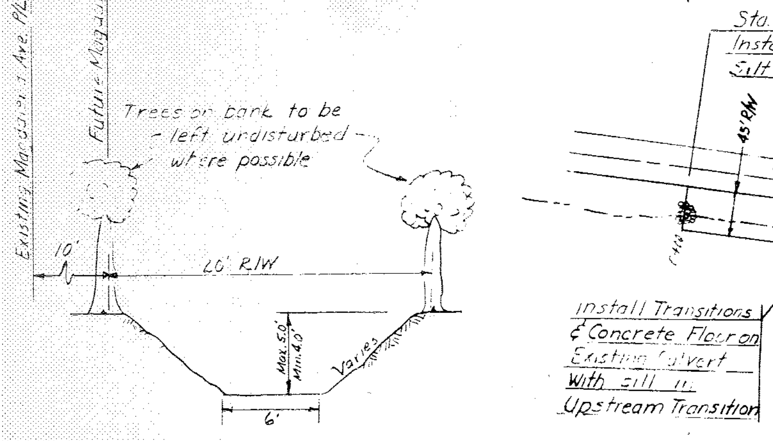
SANTA CLARA COUNTY, CALIFORNIA

JUNE 1961

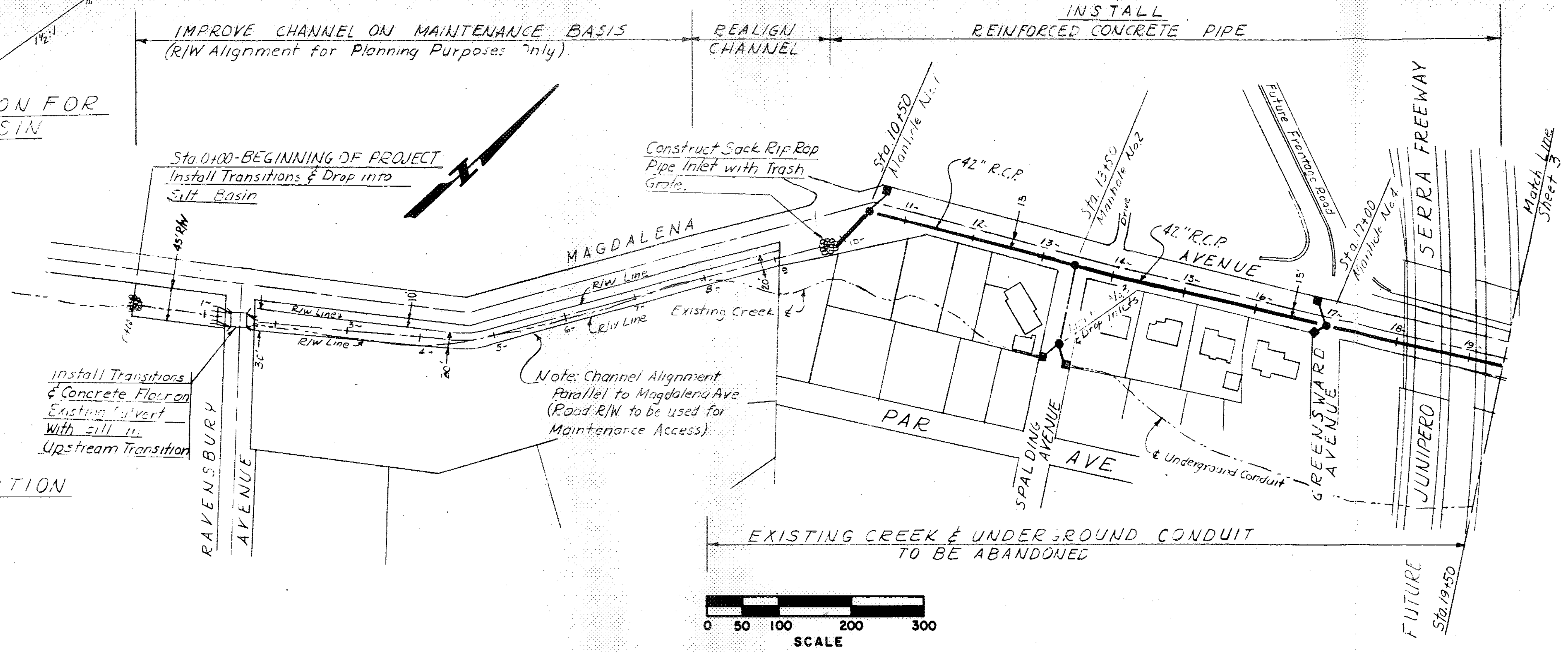
PLATE 3



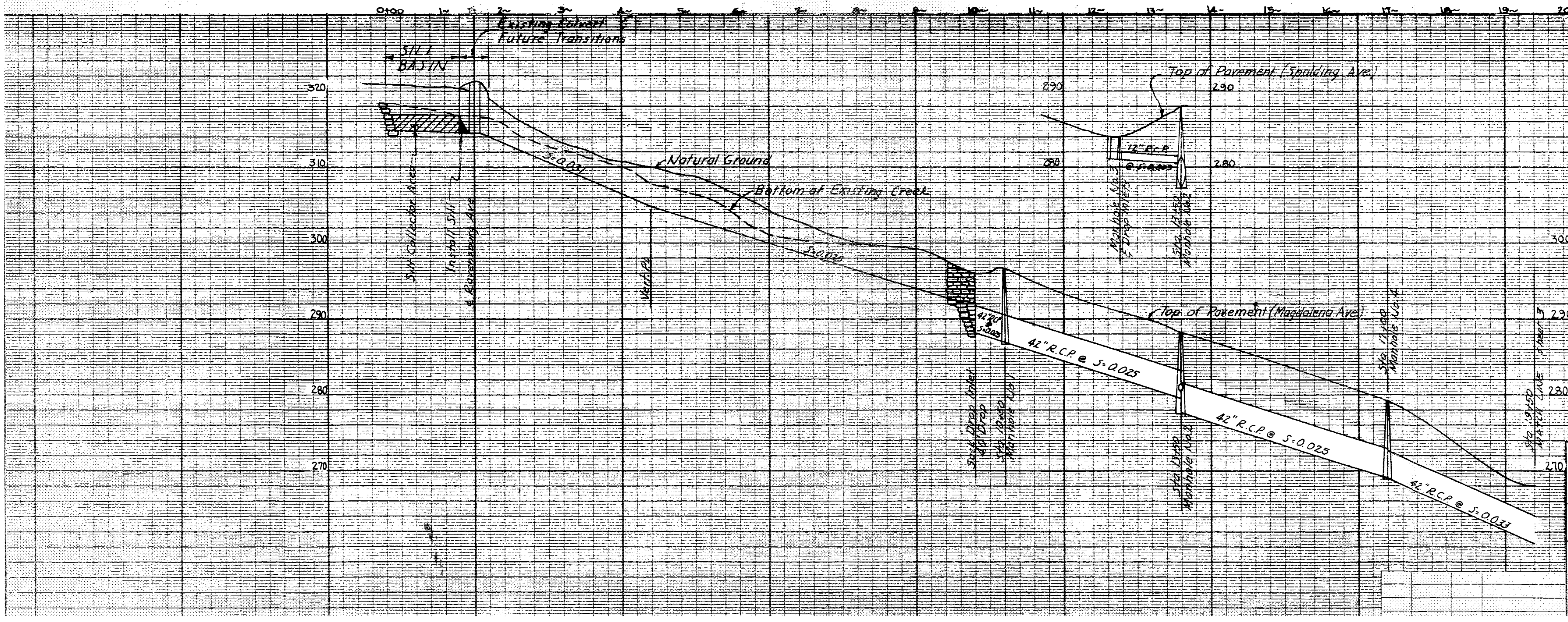
TYPICAL SECTION FOR SILT BASIN


Existing Magdalena Ave. PL
Future Magdalena Ave. PL
Trees on bank to be left undisturbed where possible
10'
20' R/W
Max. 5.0' Min. 4.0'
Varies
6'

TYPICAL CHANNEL SECTION


IMPROVE CHANNEL ON MAINTENANCE BASIS
(R/W Alignment for Planning Purposes Only)
REALIGN CHANNEL
INSTALL REINFORCED CONCRETE PIPE
Sta. 0+00-BEGINNING OF PROJECT
Install Transitions & Drop into Silt Basin
45' R/W
Construct Sack Rip Rap Pipe Inlet with Trash Grate.
Sta. 10+50 Manhole No. 1
42" R.C.P.
Sta. 13+50 Manhole No. 2
42" R.C.P.
Future Frontage Road
SERRA FREEWAY
Sta. 17+00 Manhole No. 4
Match Line Sheet 3
MAGDALENA
AVENUE
R/W Line
Existing Creek
Install Transitions & Concrete Floor on Existing Culvert With sill in Upstream Transition
Note: Channel Alignment Parallel to Magdalena Ave. (Road R/W to be used for Maintenance Access)
RAVENSBURY AVENUE
PAR
AVE.
SPALDING AVENUE
GREENSWARD AVENUE
JUNIPERO
FUTURE
Sta. 19+50
Underground Conduit
EXISTING CREEK & UNDERGROUND CONDUIT TO BE ABANDONED
0 50 100 200 300
SCALE

BASIS OF ELEVATIONS:
1954 U.S.G.S. DATUM
BASED ON 1929 S.L.D.



JOB NO.

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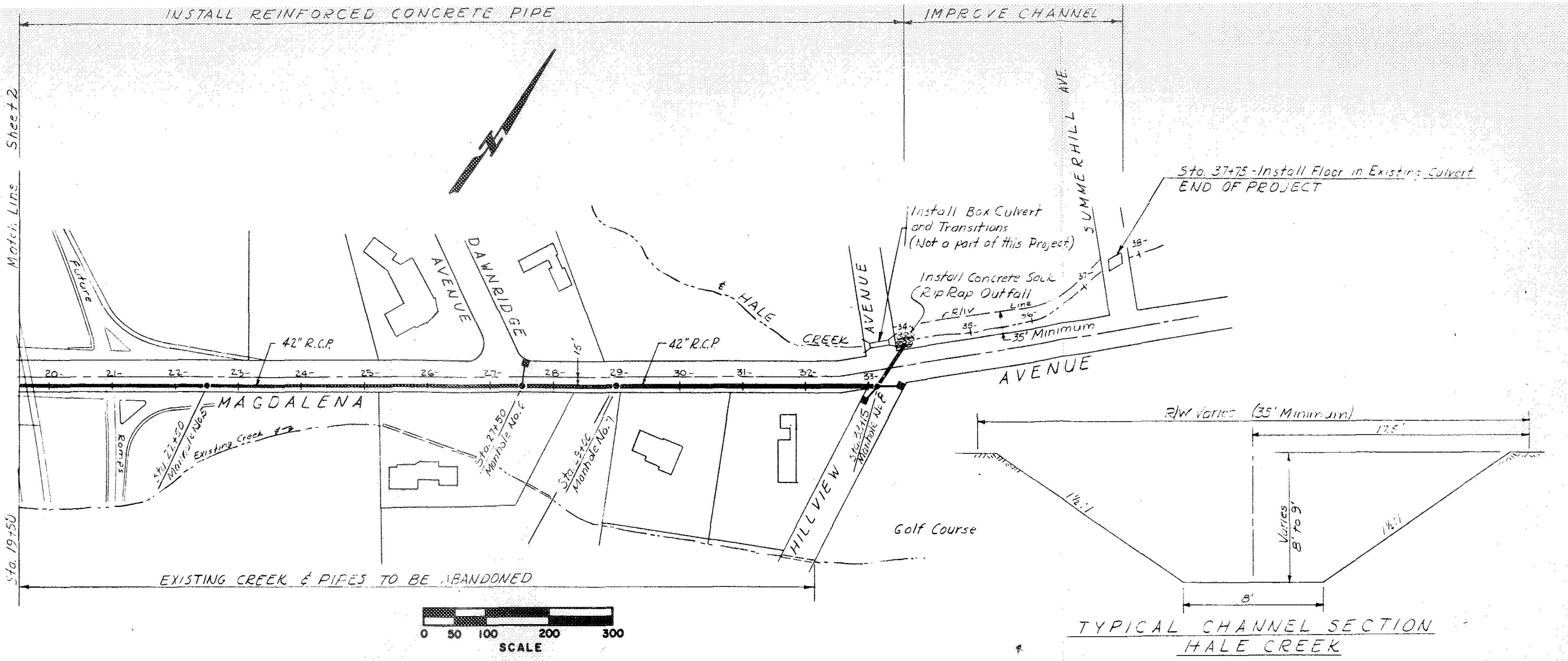
ZONE NW-1 (NORTH WEST) PROJECT NO. 10020
MAGDALENA CREEK IMPROVEMENT

SANTA CLARA COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

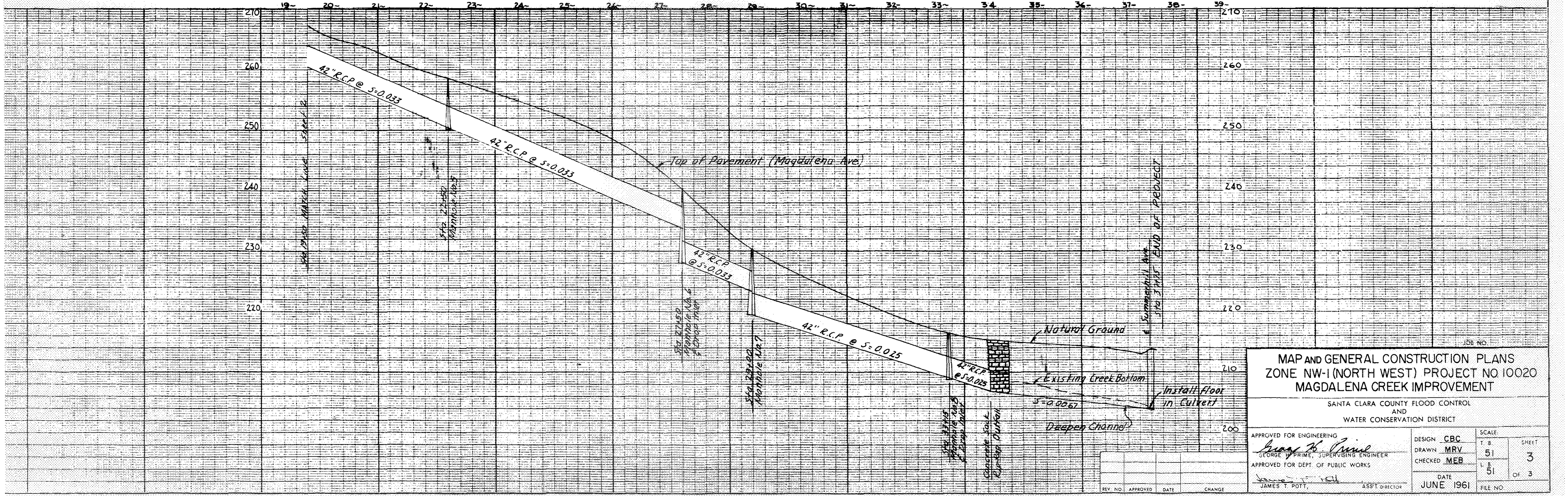
APPROVED FOR ENGINEERING
George H. Prime
GEORGE H. PRIME, SUPERVISING ENGINEER
APPROVED FOR DEPT. OF PUBLIC WORKS
JAMES T. POTT ASS'T. DIRECTOR

DESIGN CBC
DRAWN MRV
CHECKED MEB
DATE JUNE 1961

SCALE:
T. B. 51
L. B. 51
SHEET 2 OF 3



TYPICAL CHANNEL SECTION
HALE CREEK



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ZONE NW-1 (NORTH WEST) PROJECT NO. 10020
MAGDALENA CREEK IMPROVEMENT

SANTA CLARA COUNTY FLOOD CONTROL
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APPROVED FOR ENGINEERING
George W. Prime
GEORGE W. PRIME, SUPERVISING ENGINEER
APPROVED FOR DEPT. OF PUBLIC WORKS
James T. Pott
JAMES T. POTT, ASS'T DIRECTOR

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T. B. 51
L. B. 51
SHEET 3 OF 3
FILE NO.